THE DIVERSITY AND SUSTAINABILITY OF ORNAMENTAL PLANTS TRADED BY GUARANI COMMUNITIES OF MISIONES PROVINCE, ARGENTINA

HÉCTOR A. KELLER[1, 3], VICTORIA CLIFFORD[2] & JORGE J. ARAUJO[1]

Summary: Keller, H. A., V. Clifford & J. J. Araujo. 2010. The diversity and sustainability of ornamental plants traded by guarani communities of Misiones province, Argentina. Bonplandia 19(2): 135-146. ISSN: 0524-0476.

The study covers ornamental plants species that are traded by two Guarani communities in Argentina. The trade is described, as well as the frequency, abundance and diversity of plants for sale on roadside stalls, along with the income they generate. Harvested and unharvested areas of forest are compared; the relative impacts of Guarani harvest and commercial timber extraction on ornamental plants are evaluated, and some traditional Guarani beliefs are described that regulate the harvest of ornamental plants by the Guarani.

Key words: Atlantic rainforest, biodiversity, Ethnobotany, indigenous peoples, natural resources, sustainable use.

Resumen: Keller, H. A., V. Clifford & J. J. Araujo. 2010. Diversidad y sustentabilidad de las plantas ornamentales comercializadas por comunidades guaraníes de la provincia de Misiones, Argentina. Bonplandia 19(2): 135-146. ISSN: 0524-0476.

Se estudian las especies ornamentales que se comercializan en dos comunidades guaraníes de Argentina, se describe la actividad, se ofrece información acerca de la riqueza, abundancia y diversidad de plantas halladas en los puestos de venta, y los ingresos que generan. Se comparan áreas aprovechadas con áreas sin aprovechamiento, se evalúa el impacto de la extracción maderable sobre este recurso y se detallan ciertos criterios tradicionales que tienden a regular la recolección de plantas.

Palabras clave: Bosque Atlántico, biodiversidad, Etnobotánica, pueblos indígenas, recursos naturales, uso sustentable.

Introduction

Misiones Province in the extreme Northeast of the Argentina Republic hosts the largest remnant of one of the most threatened ecosystems on the planet, the High Parana Atlantic rainforest (Placci & Di Bitetti, 2006). In this subtropical forest, which covers more than a million hectares of Misiones province, live more than 5000 Guarani from the Mbya and Ava Chiripa groups, in approximately 70

[1] Facultad de Ciencias Forestales, Universidad Nacional de Misiones, Bertoni 124, C.P. 3380, Eldorado, Misiones Argentina.
[2] School of Biological Sciences, University of Reading. RG6 6AS, United Kingdom.
[3]Instituto de Botánica del Nordeste (UNNE-CONICET), Casilla de Correo 209, 3400 Corrientes, Argentina. E-mail: kellerhector@hotmail.com

communities. The subsistence activities of these communities vary according to their location: those living in dense forest mainly carry out traditional activities including hunter gathering and slash and burn agriculture. In contrast, those communities that live nearer to urban centres, commercial agriculture or main roads have adopted non-traditional subsistence strategies, such as temporary jobs in the cash economy or trade in handcrafts or ornamental plants. Two such communities were studied for this research.

The Guarani community of Teko'a Arandu is in Eldorado department of Misiones province, by the side of Provincial Road No 17 (Fig. 1). It has landrights over 5014 hectares of primary forest. Its population consists of 50 families with 4 or 5 members each, who live in subsistence housing provided by the Provincial government. One of the community's most important sources of income is from the sale of ornamental plants and crafts.

Some 20 km away from the village, on the roadside of Provincial Road Nº 20, is the community of Yvyra Pepe Poty. It is on private land owned by a timber company. 25 families live there, with subsistence activities similar to those of Teko'a Arandu. But in contrast, the families of Yvyra Pepe Poty are dispersed along the road, separated by patches of cultivated land and strips of forest.

This article aims to explain the process by which ornamental plants are harvested and traded by the two communities. The roadside stalls were surveyed in order to analyse of the frequency, abundance and diversity of plants on them. Transects were taken of ornamental species in areas of differing forest cover, in order to evaluate the impact on ornamental plants of both harvest by the Guarani and of timber extraction by timber companies. Structured and unstructured interviews with community members revealed some beliefs that regulate the harvest of different forest resources tradi-

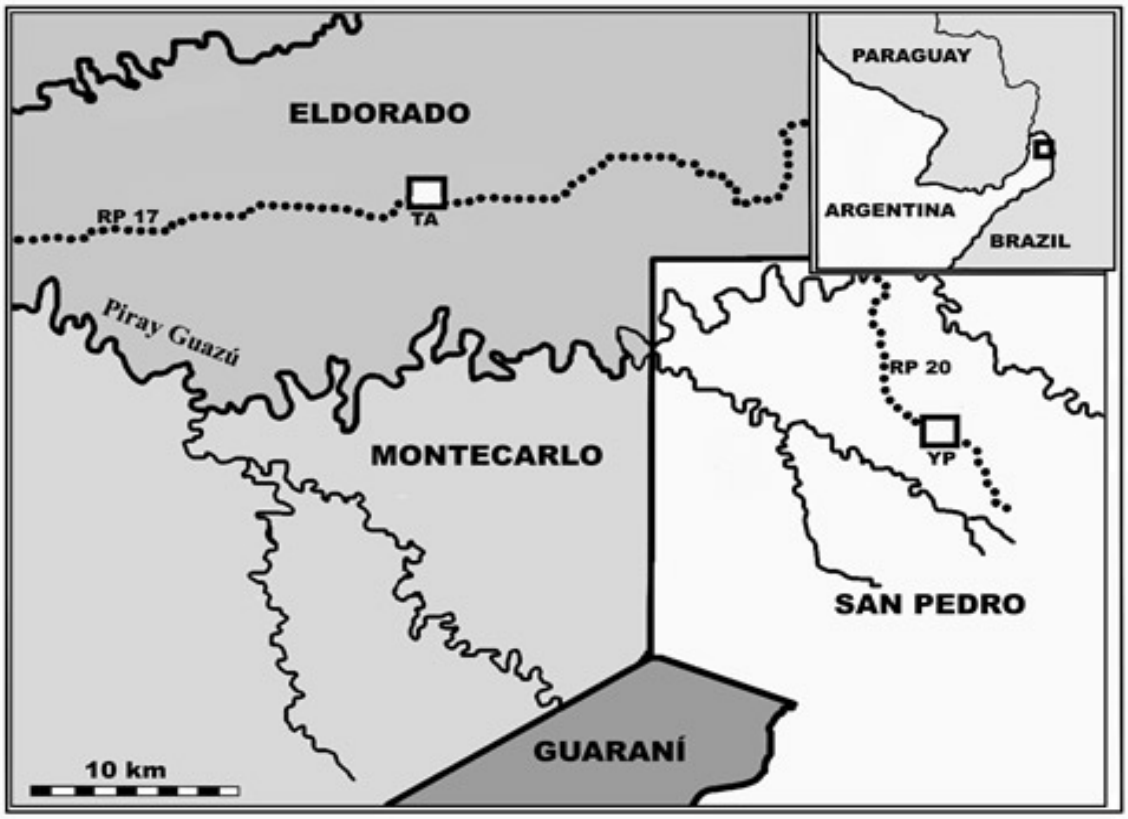

Fig. 1. Location map of the guarani communities (TA: Teko'a Arandu; YP: Yvyra Pepe Poty).

tionally used by communities. Some of these beliefs have been adapted to non-traditional products such as those now traded, such as ornamental plants and handcrafts.

Methods

The survey of plants on stalls in the communities and the transects of species in the forest were carried out between May and July 2008. The task required prior training in plant identification, for which available illustrated guides were used (Reitz, 1983, Johnson, 2001; Freuler, 2006; Insaurralde & Radins, 2007), along with visits to university and commercial nurseries and field visits.

Herbarium specimens were made of plants found in flower or fruit, and these were deposited in the CTES herbarium of the Botanical Institute of the Northeast, in Corrientes, Argentina.

In order to sample ornamental plants in the forest, Guarani paths through the forest were followed, identifying and counting specimens that were pointed out by a guide from the community. This was done for differing cover (logged and harvested forest, unlogged and harvested forest, logged and unharvested forest and unlogged and unharvested forest). The lengths of the transects depended upon the lengths of the available paths and ranged from 500m to 4000m. In order to render the data from differing areas of forest cover comparable with each other, the figures obtained from the transects were transmuted to relative values (the number of kilometres walked for the number of host trees necessary to stock a stall). Although all the ornamental plants were counted, consideration here is only of epiphytic orchids, because although species of other plant families are very abundant in the forest, they are only occasionally collected by the Guarani.

The kind attention of community members and the close bonds established with them over many years, enabled frank discussion of the cultural aspects that influence the Guaranis' relationship to orchids.

Results

Harvest and sale of plants

It was observed that the harvest of plants for trade was often a subsidiary part of traditional trips into the forest, whose primary purpose was to gather food and other resources. This behaviour has also been observed in other communities in the Province (Pochettino, 2007). At other times, the collection of ornamental plants can be the primary objective of a trip into the forest, but the Guarani would also use the journey to obtain other resources (primary material for basketry, medicines, food etc.). The diminution of specimens in the areas of forest near a village, or the discontinuous distribution of certain species, often necessitates long journeys of many kilometres, and up to two days duration.

Epiphytic orchids are obtained from the topmost branches of their host trees, by climbing (Fig. 2A) or occasionally by felling (Fig. 2B). Sometimes young guaranis cut trees and obtain orchid from its, but this practice is disapproved by old guaranis, and usually the felled tree is used for another objectives (wood for constructions, rustic bridges, etc.).

As a by-product of harvest, sometimes segments of tree trunk or branches are collected, together with the plants they are hosting. This is in order to avoid giving the stress of transplantation to the epiphytes. At other times, large areas of bark are carefully cut, to avoid uprooting the epiphytes that cover their surface (Fig. 2C). Their certain ways of adding value to the plants: planting them in bamboo containers, or inside the fruit of *Lagenaria siceraria* (Curcubitaceae) (Fig. 2D), tying them onto woody supports (Fig. 2E). But most of the plant material offered for sale on the stalls is «bare-rooted» (Fig. 2F). This has two negative effects: on one hand the sale of large volumes of plants occurs at low prices; and on the other hand there is much death and resulting waste of specimens on the stalls.

Each stall is owned by one family and consists of a precarious structure erected on the verge of a tarmac road (Fig. G). The stall also sells handcrafts (basketry, necklaces, wooden carvings etc.). Sometimes the products are

Fig. 2. A: Climbing to obtain epiphytic plants. B: felled tree for harvest orchids and other purposes. C: removing a piece of bark with orchids. D: orchids in containers of *Lagenaria siceraria* (Cucurbitaceae). E: tying orchids onto woody supports. F: plants «bare rooted» offered for sale. G: stall on the verge of road. H: transporting plants for sale at urban centres.

transported for sale at urban centres, tourist sites or large, busy provincial festivals (Fig. 2H). The usual final buyers of the products are tourists, orchid collectors and orchid growers.

Members of the study communities frequently bought plants that had been harvested by members of other communities situated deeper in the forest. They also frequently sold products to other intermediaries, such as to growers or members of other Guarani communities situated near tourist centres, such as the Iguazú falls.

Plants traded in the communities

At the time of the survey, there were 1267 specimens belonging to 57 species of ornamental plants for sale in the two study villages. On the ten stalls in the village of Yvyra Pepe Poty, 1061 specimens were counted, belonging to 52 species, whilst the village of Teko'a Arandu had five stalls where 206 specimens of 36 species were counted (Table 1). The native ornamental plants most in demand in local and national markets are the orchids (Table 2), which is why they are the most intensively traded plants in the communities. Species from other plant families (Bromeliaceae, Piperaceae, Polypodiaceae, etc.) are in less demand nationally and locally, and so are harvested and traded less in the villages.

Epiphytic plants on the stalls have much higher abundance and richness and therefore diversity than terrestrial plants (Table 3). The most abundant species on the stalls (with more than 80 specimens) are the following orchids: *Oncidium riograndense* (160), *Maxillaria vitelliniflora* (108), *Maxillaria picta* (102), *Miltonia flavescens* (84), and *Gomesa planifolia* (83). The most frequent species (present on over 8 stalls) are also all orchids: *Oncidium riograndense* (13), *Catasetum fimbriatum* (10), *Miltonia flavescens* (9), *Trichocentrum pumilum* (9), *Oncidium paranaense* (9) and

Table 1. Number of stalls, richness, abundance and diversity of ornamental plants founded in both communities.

	Stalls	Richness	Abundance	Diversity (Shannon)
Teko´a Arandu	5	36	206	3.103
Yvyra Pepe Poty	10	52	1061	3.186
Summary	15	57	1267	

Table 2. Richness, abundance and diversity of families of ornamental plants founded in stalls.

Family	Richness	Abundance	Diversity (Shannon)
Orchidaceae	43 (74%)	1203 (94,9%)	3,14
Bromeliaceae	9 (16%)	50 (4%)	1,88
Amarylidaceae	1 (2%)	1 (0,1%)	--
Lycopodiaceae	1 (2%)	5 (0,4%)	--
Piperaceae	1 (2%)	6 (0,5%)	--
Pteridaceae	1 (2%)	1 (0,1%)	--
Vittariaceae	1 (2%)	1 (0,1%)	--
Summary	57	1267	3.29

Table 3. Richness, abundance and diversity of epiphytic and terrestrial plants founded in stalls.

	Richness	Abundance	Diversity (Shannon)
Epiphytic plants	51 (89%)	1239 (98%)	3,23
Terrestrial plants	6 (11%)	28 (2%)	1,18
Summary	57	1267	3,29

Maxillaria vitelliniflora (9).

In general terms, the most abundant species on the stalls are also abundant in the environment, and the most frequent species on the stalls are also common in the forest, or they can be species that are rare in the forest, but highly sought after by buyers. This is the case of *Catasetum fimbriatum*, 49 specimens of which were found on 10 out of the 15 stalls surveyed.

Beliefs regulating harvest of the resource

The Guarani believe in spirits, who live in the different elements of nature. These spirits are generally considered to be malign and to be able to make ill or even kill whoever disturbs them (Cadogan, 1992; Keller, 2002). The *modus operandi* of these spirits is to embed stones or invisible arrows in the body of the person who exceeds the spirits' level of tolerance. They can also cause environmental disasters. Generally these spirits live inside plants, animals and special places, and fear of them regulates the harvest of certain resources, for example, fear of the spirit of the marshes causes the Guarani to avoid flooded areas, in the knowledge that they are the favoured haunts of amimals, especially large mammals.

Surprisingly, these beliefs have adapted to a resource that is not used traditionally: ornamental epiphytic plants. A few years ago, strong tornadoes and storms lashed various parts of Misiones province, including the locality of Pozo Azul, where the Teko'a Arandu community is settled. The event caused damage to the forest and also to Guarani houses and crops. The shaman elder of the community thought the storms were caused by the spirit of the wind, «Yvytu-ja», and explained to the younger ones that this spirit lived inside epiphytic plants «ka'a tyre'y» and that felling trees had exacerbated the storms. This belief has a pragmatic counterpart because the trees act as a windbreak. So the extraction of epiphytic plants is regulated by certain rules that prevent an excessive quantity of trees from being felled. One of these rules was mentioned earlier, that in order to fell a tree, there must be enough plants on it to fill one or two bags.

Other species that could be traded are not harvested by the Guarani because they are also subject to taboos. One example of this is *Aspidogyne kuczynskii* (Porsch) Garay (Orchidaceae), or «inambu ka'a» in Guarani, which means «partridge grass». The Guarani believe that if women touch this plant, they will lose their maternal instinct. They affirm that the female partridge abandons the nest after laying the eggs, and it is the male who incubates and raises the chicks.

Availability of the resource

In addition to the extraction of orchids and other plants by the Guarani, various activities external to the communities affect the availability and sustainability of this resource. One of these is the felling of timber by private timber companies, which was studied in the forest near the communities.

Table 4 and the graph at Fig. 3 show, more completely than has previously been studied, the effort required to obtain the amount of epiphytic orchids necessary to stock a stall. This effort is expressed in terms of km walked and the quantity of trees climbed to obtain the resource in question.

According to estimates based on samples from different environments, it is possible to observe that in a forest which has never been

harvested for timber or ornamental plants, extraction of orchids from 40 host trees or on a 2km walk is sufficient to stock the most heavily laden stall. Where ornamental plants alone have been harvested by the Guarani for several years, the distance necessary to walk rises to 5km and the quantity of trees climbed ascends to 50. The forests subjected to commercial timber felling have fewer trees and so can offer less support to epiphytic plants. Also the changed light conditions and consequent arrival of lianas, bamboos and other weedy species, threaten the regeneration or even survival of epiphytic plants. Column 3 of Table 4 shows that a forest with timber felling alone, without previous harvest of ornamental plants by the Guarani, support many fewer epiphytic orchids per kilometre and per tree than a forest where no timber felling has occurred, but only orchid harvest by the Guarani. Where timber felling by commercial enterprises and orchid harvest by the Guarani have both been carried out, the distances walked and number of host trees needed to stock a stall are significantly greater. If we bear in mind that certain tree species and certain places are subject to cultural restrictions that regulate the extraction of resources, the difficulties expressed by Fig. 3 (distances and host trees) rise considerably in all cases.

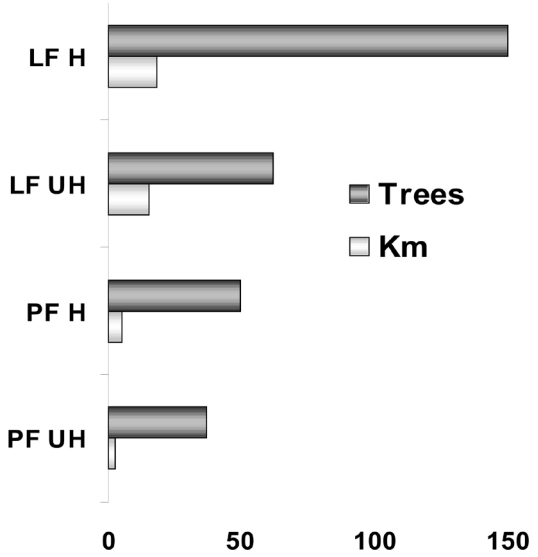

Fig. 3. Estimations of kilometers walked and tree climbed to obtain the amount of epiphytic orchids necessary to stock a stall, in a logged and harvested forest (LF H), logged and unharvested forest (LF UH); primary unlogged and harvested forest (PF H) and primary unlogged and unharvested forest (PF UH).

Discussion and Recommendations

Ornamental plants are an important economic resource for the Guarani communities of Misiones province, Argentina. The diversity of species offered for sale on roadside stalls is high, principally consisting of epiphytic orchids. According to the results obtained in this study, the availability of epiphytic orchids is significantly more reduced by timber companies than by prolonged harvest by the Guarani. The overexploitation of timber, and degradation of the forest that it causes, have been denounced by various Guarani communities in the province because of its environmental and cultural impact. Only intervention by provincial and national government can save the Guarani way of life and the globally significant Atlantic rainforest in which they live.

Table 4. Estimations of kilometers walked and tree climbed to obtain the amount of epiphytic orchids necessary to stock a stall.

Kind of Forests	Kilometers of Walk	Trees to Climb
Primary forest unharvested (PF UH)	2	37
Primary forest harvested (PF H)	5	50
Logged forest unharvested (LF UH)	15	62
Logged forest harvested (LF H)	18	150

The sustainability of the harvest and trade in ornamental plants is an important objective for the subsistence and development of Guarani communities, and also for the conservation of biodiversity in the threatened Atlantic rainforest. Members of the communities, the government and the local university, as well as orchid collectors associations and provincial NGO's have initiated some actions to pursue this objective, including: ecological restoration, training in propagation, running a nursery, and preparation of plant material for sale. These budding initiatives deserve more support from organisations responsible for conserving biodiversity and caring for the most needy social sectors.

Acknowledgements

To the members of the Guarani communities of Teko'a Arandu, and especially to chief Nicanor Benitez, Isidro Benitez, Marciana Fernández and Armando Benitez, and of Yvyra Pepe Poty, especially Angel Benitez, Olegario Benitez and Chief Enrique Gonzáles. To orchidophiles Carlos Fritz, Rita Franke and Gerd Franke†.

To Professors Frank Bisby and Sir Ghillean Prance of Reading University, to Fernando Niella and Patricia Rocha of the Misiones University, to Marilyn Cebolla –Badie of Barcelona University and to Jose Radins of the Ministry of Ecology and Tourism for their technical and academic advice.

Bibliography

CADOGAN, L.1992. Diccionario Mbya-Guaraní-Castellano. Biblioteca Paraguaya de Antropología, Asunción. 61 pp.

FREULER, M. J. 2006. Cien orquídeas argentinas. Ed. Albatros. Buenos Aires, 128 p.

INSAURRALDE, I. S. & J. A. RADINS. 2007. Misiones orchids. Ed. Golden Universe. Buenos Aires, 192 p.

JOHNSON, A. E. 2001. Las orquídeas del Parque Nacional Iguazú. Ed. L.O.L.A., Buenos Aires, 296 p.

KELLER, H. A. 2002. El espíritu de los pantanos malogra una travesía hacia la tierra sin males, Observaciones sobre el animismo guaraní. Suplemento Antropológico de la Universidad Católica 37 (1): 143-171. Asunción, Paraguay.

PLACCI, G. & M. DI BITETTI. 2006. Situación ambiental en la Ecorregión del Bosque Atlántico del Alto Paraná (Selva Paranaense). In Brown, A., U. Martínez Ortíz, M. Acerbi & J. Corcuera (Eds.): La Situación Ambiental Argentina 2005. Fundación Vida Silvestre Argentina. Buenos Aires. p. 197-225.

POCHETTINO, M. L. 2007. Recolección y comercialización de plantas silvestres en dos comunidades Mbya-Guaraní (Misiones, Argentina). Kurtziana 33 (1). Volumen especial de Etnobotánica: 27-38.

REITZ, R. P. 1983. Bromeliáceas e a malária-Bromélia endêmica. In R. Reitz: Fl. Il. Catarinense BROM: 1-559.

Original recibido el 20 de septiembre de 2010; aceptado el 5 de noviembre de 2010.

Apendix 1. List of ornamental plants founded in stalls, abundance, frequency, epiphytic o terrestrial habits, common name, etymology, voucher (C: Clifford & al., K: Keller or Keller & al., T: Tressens & al., DF: determinated in field)

SPECIES	Abund.	Freq.	Eor T	Common name	Ethymology	Voucher
PTERIDOPHYTA						
Lycopodiaceae						
Huperzia mandiocana (Raddi)Trevis.	5	3	E	pino del aire	pine from air	K1941
Pteridaceae						
Hemionitis tomentosa (Lam.)Raddi	1	1	T	doradilla	small gold	K 1160
Vittariaceae						
Vittaria lineata (L.)Sm.	1	1	E	avukuja guachu		K 812
SPERMATHOPHYTA-DICOTYLEDONEAE						
Piperaceae						
Peperomia tetraphylla (G. Forst.) Hook. & Arn.	6	1	E	jatevu ka'a	tick's plant	K 798
SPERMATHOPHYTA-MONOCOTYLEDONEAE						
Amarylidaceae						
Hippeastrum glaucescens (Mart.) Herb.	1	1	T	tupã poty, chevoja ramingua	god's flower, like onion	K 2095
Bromeliaceae						
Aechmea calyculata (E. Morren) Baker	10	3	E	ka'i avachi	monkey's corn	K 1091
Aechmea distichantha Lem.	2	2	E	karaguata tyre'y	epiphytic bromelia	K 1079
Bilbergia nutans H. Wendl. ex Regel	17	2	E	kaì avachi	monkey's corn	K 304
Bilbergia zebrina (Herb.)Lindl.	3	2	E	chivi ruguai	jaguar's tail	K 1087
Tillandsia stricta Sol. ex Sims.	5	1	E			T 4899
Tillandsia tenuifolia L.	4	3	E			C10
Tillandsia recurvata (L.) L.	6	1	E	ka'i avachi	monkey's corn	K 2550

SPECIES	Abund.	Freq.	Eor T	Common name	Ethymology	Voucher
Vriesea friburgensis (Mez) L.B. Sm.	2	1	E	ka'i avachi	monkey's corn	C 3
Vriesea platynema Gaudich.	1	1	E	chivi ra'yi	jaguar tooth	C 13
Orchidaceae						
Acianthera aphthosa Lindl.	1	1	E			DF
Acianthera aveniformis Hoehne	5	1	E	kui' i ka'a, tete	porcupine's plant, body	3105
Acianthera pubescens Lindl.	49	6	E			DF
Acianthera recurva Lindl.	21	3	E	parakáu ka'a	parrot's plant	T 5887
Acianthera sonderana Rchb. f.	1	1	E			K 1098
Anathallis linearifolia Cogn.	7	4	E	iñapeku ka'a	wood picker's plant	K 1430
Barbosella porschi (Kraensl.) Schltr.	1	1	E			K 1100
Bulbophyllum napellii Lindl.	26	3	E	iñapeku ka'a, chi'i ka'a	wood's picker tongue, porcupine's plant	K 3533
Campylocentrum neglectum (Rchb. f. & Warm.) Cogn.	1	1	E	ambere-mbói	small lizard	K 847
Campylocentrum grisebachii Cogn.	1	1	E	ju'y ka'a	frog's plant	T 6739
Capanemia micromera Barb. Rodr.	6	3	E	karaja rendiva	monkey's whiskers	C 7
Capanemia superflua Rchb. f.	42	4	E	anguja ruguai	mouse's tail	K 94
Catasetum fimbriatum (C. Morr.) Lindl.& Paxton	49	10	E	mbaraka poã kuña	guitar's medicine (female)	K 1433
Cyclopogon congestus (Vell.) Hoehne.	17	5	T	akañy poã ñandu poã, tarope	medicine for sickness, medicine for spider's bite	K 307
Cyrtopodium palmifrons Rchb. f et Warm.	22	7	E	mbaraka poã ava	guitar's medicine (male)	K 3385

SPECIES	Abund.	Freq.	Eor T	Common name	Ethymology	Voucher
Epidendrum paniculatum Ruiz et Pav.	25	5	E	takua- i	small bamboo	K 923
Epidendrum rigidum Jacq.	8	2	E	takua'i		DF
Eurystyles actinosophila (Barb.Roodr.)Schltr.	1	1	E			K 5891
Gomesa planifolia (Lindl.) Kl. et Rschb. f.	83	8	E	okirea	orchid	K 3469
Isabelia virginalis Barb. Rodr.	16	3	E	kavure'i ka'a, kavure'i retyma	pygmy owl's plant, pygmy owl's leg	C 9
Isochilus linearis (Jacq.) R. Br.	11	4	E	takuarembo-tyre'y	epiphytic bamboo	K 1890
Malaxis parthonii C. Morr.	1	1	T			C 2
Maxillaria picta Hook	102	8	E	kambire	tit's skin	C 11
Maxillaria spegazziniana Krzl.	33	8	E	karaja rendiva	monkey's whiskers	C 6
Maxillaria vitelliniflora Barb. Rodr.	108	8	E	karaja rendiva	monkey's whiskers	C 8
Miltonia flavescens Lindl.	84	9	E	akuchi ra'yi, ka'i rembi'u	monkey's corn, monkey's food	K 2841
Oeceoclades maculata Lindl.	2	2	T			C 1
Oncidium divaricatum Cogn.	71	8	E	ka'i pakova, orkirea rogue pe	monkey's banana, orchid with flattened leaves	T 4686
Oncidium edwalli Cogn.	10	3	E			C, 12
Oncidium fimbriatum Lindl.	4	2	E			*DF*
Oncidium longicornu Mutel	21	7	E	orkirea ratã	hard orchid	T 4653
Oncidium longipes Lindl.	31	6	E			DF
Oncidium paranaense Krzl.	23	9	E	orkirea ratã	hard orchid	K 371

SPECIES	Abund.	Freq.	Eor T	Common name	Ethymology	Voucher
Oncidium riograndense Cogn.	160	13	E	ka'i rembojape	monkey's bred	C 5
Phymatidium delicatulum Lindl.	11	3	E			K 3996
Pleurothallis hygrophila Barb. Rodr.	4	1	E	kaguare apeku	anteater's tongue	DF
Pleurothallis rahbdosepala Schltr.	48	2	E	kaguare apeku	anteater's tongue	DF
Sophronitis cernua Lindl.	33	4	E	parakáu ka'a	parrot's plant	K 741
Specklinia grobyi Bateman ex Lindl.	11	5	E	tatu nambi	armadillo's ear	K 60
Trichocentrum pumilum Lindl.	42	9	E	tatu nambi	armadillo's ear	K 2026
Trichosalpinx matinhensis (Hoehne) Luer	4	2	E			K 1090
Warrea warreana Lodd. ex Lindl.	6	4	T	mbaraka poã yvyre gua	guitar's medicine (from soil)	DF
Zigopetalum maxillare Lodd.	1	1	E	orkírea chachi regua		K 3311